


Claims

- [c1] 1. An automatic transfer switch comprising:
a housing;
a switch for switching electrical connection from a first external power source to a second external power source;
a first and a second timer disposed within said housing, said first and second timers having first and second time delays, respectively;
said switch responsive to said first and second timers; and wherein
said second time delay is nested within said first time delay.
- [c2] 2. The automatic transfer switch of Claim 1, further comprising:
a third timer disposed within said housing, said third timer having a third time delay;
said switch responsive to said third timer; and wherein
said third time delay is nested.
- [c3] 3. The automatic transfer switch of Claim 1, further comprising:
a controller disposed within said housing; wherein
said switch and said first and second timers are responsive to said controller.
- [c4] 4. The automatic transfer switch of Claim 3, further comprising:
a display disposed on said housing for displaying a status of at least one of said switch, said first and second timers, said nested time delays, and an external power source.
- [c5] 5. The automatic transfer switch of Claim 4, wherein:
said display is responsive to said controller.
- [c6] 6. The automatic transfer switch of Claim 3, further comprising:
a control panel disposed on said housing for inputting information to said controller.
- [c7] 7. The automatic transfer switch of Claim 1, further comprising:
a third timer disposed within said housing, said third timer having a third time delay;
said switch responsive to said third timer; and wherein

said third time delay is adjustable between zero delay time and an upper threshold delay time.

- [c8] 8.The automatic transfer switch of Claim 5, further comprising:
an actuator responsive to said controller;
said switch responsive to said actuator; and wherein
said actuator comprises an overcentering mechanism.
- [c9] 9.The automatic transfer switch of Claim 8, further comprising:
a drive system responsive to said controller;
said actuator responsive to said drive system; and wherein
said drive system is a high speed drive system.
- [c10] 10.The automatic transfer switch of Claim 1, wherein;
said switch comprises electrical contacts, wherein said electrical contacts are
high pressure contacts.
- [c11] 11.The automatic transfer switch of Claim 1, wherein;
the beginning time of said second time delay is determined from the end time
of said first time delay.
- [c12] 12.The automatic transfer switch of Claim 5, wherein;
said second time delay is responsive to said controller;
wherein said controller overrides the nesting of said second time delay nested
within said first time delay; and
wherein said second time delay is arranged serial to said first time delay.
- [c13] 13.An automatic transfer switch control system comprising: 2
an automatic transfer switch adapted to switch power service between a first
power source and a second power source, said automatic transfer switch
comprising; a switch, a first timer, a second timer, a controller, and a computer;
said switch responsive to said first and second timers;
said first and second timers responsive to said controller;
said controller responsive to said computer; wherein
said first and second timers have first and second time delays, respectively, and
said second time delay being nested within said first time delay.

[c14] 14.The automatic transfer switch control system of Claim 13 wherein:
said first timer has a first parameter setting and said second timer has a second
parameter setting, and wherein;
said controller is responsive to said computer for establishing said first and said
second parameter settings.

[c15] 15.A method of switching an automatic transfer switch between first and 
second power sources comprising:
receiving a first control signal at a first timer in response to a below-threshold
signal at a primary source;
initiating a first time delay at a first timer in response to said first control signal;
receiving a second control signal at a second timer from said controller;
initiating a second time delay at a second timer in response to said second
control signal;
completing said first time delay;
completing said second time delay; and
transferring the electrical connection from the first power source to the second
power source in response to said first and second time delays; wherein
said second time delay is nested within said first time delay.

[c16] 16.The method of Claim 15, wherein:
said initiating a second time delay at a second timer, comprises;
initiating the beginning time of said second time delay in response to the end
time of said first time delay.

[c17] 17.The method of Claim 15, wherein:
said receiving a first control signal at a first timer comprises receiving a first
logic timing function at a controller; and wherein
said receiving a second control signal at a second timer comprises receiving a
second logic timing function at a controller.